Chemistry
Ticket Out the Door
Set 23: Metallic Bonding

Name _____Period _____

Skill 23.01 Problem 1

Explain why metals are generally good conductors while ionic compounds are not.

Skill 23.02 Problem 1

Explain how a bonding model involving delocalized electrons is consistent with macroscopic properties of metals (e.g., conductivity, malleability, ductility, and low volatility)

Skill 23.02 Problem 2

Refer to the metal points in the figure below.

Alkali Metals	Alkali Earth metals	Transition Metals									Group III
180.7	1,278										
98	650										660
63.35	839	1,539	1,660	1,902	1,857	1,246	1,535	1,495	1,453	1,085	419.73	30
39.64	769	1,526	1,852	2,468	2,617	2,200	2,250	1,966	1,552	961	321	157

Account for the following differences between.

(a) Na and Mg

(b) Na and K

(c) K and Fe

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Skill 23.03 Problem 1

To make Au stronger and harder, it is often alloyed with other metals, such as Cu and Ag. Consider two alloys, one of Au and Cu and one of Au and Ag, each with the same mole fraction of Au. For each alloy,

(a) Indicate whether the resulted alloy formed is substitutional or interstitial.

(b) Indicate which allow is harder. Justify your reasoning.

Element	Metallic Radius (pm)	Melting Point (°C)	Common Oxidation State
Au	144	1064	1+, 3+
Cu	128	1085	1+, 2+
Ag	144	961	1+

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